

The Terrestrial Mammals of Bahrain¹

MICHAEL GALLAGHER² AND DAVID L. HARRISON³
(With a map)

INTRODUCTION

A summary is given here of 13 species of terrestrial mammals which occur in Bahrain, in the Persian (Arabian) Gulf, based upon the identification by Harrison of specimens collected by Gallagher during the latter's residence on the island from December 1968 to July 1971, and during a visit in April 1974, supplemented by field observations and reports in the literature. Eight species are recorded for the first time from the Bahrain Islands.

No other systematic account of Bahrain's mammalian fauna has been published, and as changes are inevitable under pressure from an expanding human population future assessments may be measured against this brief account.

BAHRAIN

The independent State of Bahrain is an archipelago of about 30 small desert islands at the entrance to the V-shaped Gulf of Salwa (*Dowhat al Salwa*) mid-way along the Arabian shore of the Persian or Arabian Gulf. The largest of the group is Bahrain Island, some 30 miles in length from north to south, 10 miles at its broadest and with its centre at 26°03'N, 50°33'E. It is connected by causeway with Muharraq Island, on which is the international airport, and by a short bridge and a new causeway with Sitra Island and its oil terminal. Other islands on the east side include Nabi Salih and, near the shore of the Qatar peninsular, the Howar group; on the west side are Umm Nassan, Jidda and Umm Saban.

The greater part of Bahrain and its satellite islands is a desert of

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² C/o. Lloyds Bank Ltd., 6 Pall Mall, London SW1Y 5 NH, England.

³ Bowerwood House, St. Botolph's Road, Sevenoaks, Kent, England.

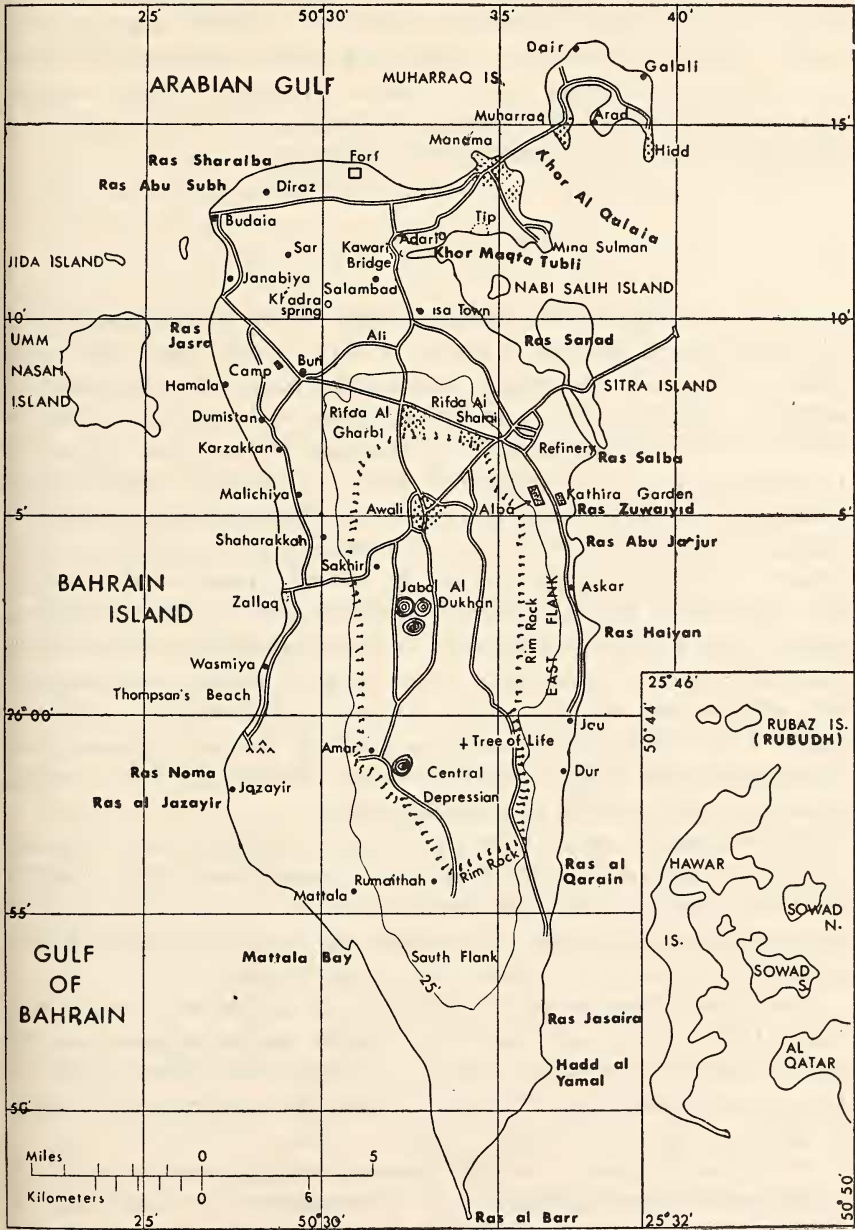
sand, stones and rock. Bahrain Island itself is an elongated dome, principally of Eocene limestone, parts of which have slumped and eroded to form dusty depressions bordered by low cliffs and hills. The Jebel al Dhukhan, at 440 feet the highest surviving part of the original dome, stands in the central, saucer-like depression. The stony flanks slope outwards and downwards to the peripheral extension of recent deposits, mostly of sabkha (salt mud flats) but also of silt, blown sand and raised beaches; only in one place (at Ras Noma, south of Zallaq on the west coast) is there an area of medium-sized dunes, though this is not extensive. In some of the larger wadis (dry water courses) cut in the west flank, deposits of windblown sand against the wadi walls produce near dune conditions, with rocks, bushes and sand hummocks in the wadi bed. There are some caves and many niches and crevices in the limestone sheets, hills and cliffs.

Howar Island, the largest of the group 13 miles south east of the southern tip of Bahrain Island, is 12 miles from north to south but only 3 miles at its broadest. It is uninhabited except for half a dozen policemen who live in the fort near a deserted fishing village at the north west tip and have one landrover, but it is occasionally visited by fishermen, and also by picnic parties who stay at the guest house near the north east tip. It consists mainly of an uneven limestone plateau, which slopes up from raised beach flats in the west to end as 30 foot cliffs on the east side. Some variety on this bleak desert island is provided by much flotsam cast up on the north and west coasts, by two small elongate hills with eroded niches used by animals for shelter, by sand-filled wadis and shallow depressions and by traces of old cultivation.

Vegetation occurs over most of the islands (Good 1954, 1955 and Wiltshire 1964), but in all except the irrigated part of the northern cultivated zone it consists of hardy xerophytic and sub-halophytic species, improved and supplemented by carpets of ephemerals after heavy rain. There are numerous plant species suitable for herbivores, but these are patchy in distribution.

Cultivation, mostly in date gardens, is restricted by the availability of water to a narrow discontinuous belt which stretches in an arc from near Zallaq on the west coast of Bahrain Island to Sitra on the east, and to parts of Muharraq, Sitra and some smaller offshore islands. Most of the available water seeps slowly along pervious strata from Saudi Arabia in the west and is tapped by hundreds of artesian wells or emerges as land and submarine springs; it is supplemented by some water which accumulates from local rains. The salinity increases and the static head decreases from the north-west to the south-east and supplies are dwindling rapidly and becoming more saline. The lowering of this water table has, over the years, caused some springs to cease or reduce their flow and the ancient subterranean aqueducts (*qanat* in Bahrain and Iran,

the equivalent of *fajaj* in Oman) to dry up. Nevertheless there are still some brackish wells in use in the southern part of the island for the watering of domestic animals. On Howar Island there are at least three cisterns for the collection of rain water; these were full in April 1974



Map of Bahrain Island,

but only one has an access for animals. The domestic oil town of Awali, in the desert, has its own water supply and flora.

The harsh desert climate is modified by the surrounding sea and the prevailing north-westerly wind (*Shimaal*) and is less severe than on the Arabian mainland, temperatures varying (in the 20-year period 1947-1966) between extremes of 39°F in winter and 113°F in summer; cold, stormy conditions can occur in winter and periods of unpleasant humidity in summer. Rainfall is very variable, averaging 75 mm over the same period, but there was a peak of 165.9 mm in 1969 and the resulting improvement in the vegetation was long-lasting.

MAMMALIAN FAUNA

As is to be expected on small desert islands, the number and variety of species on the Bahrain islands is limited. Up to April 1974 only thirteen terrestrial mammalian species have been identified from the wild with certainty; these are: one hedgehog and one shrew (*Insectivora*), three bats (*Chiroptera*), one mongoose (*Carnivora*), one gazelle (*Artiodactyla*), one hare (*Lagomorpha*) and five small rodent species (*Rodentia*). Eight of these had not been reported from the Bahrain islands previously, but this is more probably due to the fact that no systematic collecting had been attempted previously, rather than to the recent introduction and naturalisation of all the species. The discovery on Bahrain Island of the Iraq race of the Naked-bellied Tomb Bat *Taphozous nudiventris*, its most southerly record, is of interest, as is the existence of a distinct race of the hare *Lepus capensis* endemic to Bahrain Island. The local hedgehog *Paraechinus aethiopicus* also exhibits at least one characteristic which may, when more material has been studied, show that it has evolved as a separate race.

There appear to be no foxes or wild cats, though at least one of the cat skulls found on Bahrain Island is very probably that of the Arabian Wild Cat *Felis silvestris*. The absence of such species, which occur on the neighbouring mainland, is not surprising, for even if they had once occurred they would be unlikely to survive for long.

On Howar Island in April 1974 the sand rat *Meriones crassus* was found. Other species seen there were gazelle *Gazella subgutturosa*, the hare and Brown Rat *Rattus norvegicus*; a skull of the Common Mouse *Mus musculus* was found. Two Wild Goat *Capra aegagrus* were brought to the island in 1973, but later killed.

The apparent absence of other bats and smaller desert animals such as the gerbils *Gerbillus* spp. is less understandable, for conditions in some parts of the islands would seem suitable and more species may well be found.

ORIGINS

The Bahrain Islands began emerging from the sea near the close of the middle Miocene, and further local uplift in the late Miocene and Pliocene, followed by much weathering, gave the islands their present configuration (Willis 1967), though the sea level at the end of the Pliocene was probably 150 m higher than at present (Fairbridge 1961, *in* Kassler 1973).

Kassler (1973) has shown that from about 80,000 years ago the sea began to retreat, and that from about 70,000 to 17,000 years ago, during the maxima of the Pleistocene glaciations, the Gulf was almost wholly exposed in the form of a very large river valley.

The sea returned in stages to its present level about 5,000 years ago, the last two stages entered the Gulf of Salwa, cutting marine platforms at 18 m and 9 m present depth, approximately 8,000 and 7,000 years ago. There are, however, some marine deposits in the Gulf of Salwa which are 11,000 years old. Bahrain was therefore probably connected with the mainland from about 80,000 to 11,000 (or 7,000) years ago, during which time vertebrate fauna from the mainland must have occupied suitable niches in the Bahrain ecosystem.

The Bahrain Islands now lie wholly within the 18 m depth contour and are joined to the mainland of Qatar and Saudi Arabia by a narrow structural feature, known as the Bahrain Ridge, over which the water depth is less than 9 m. To the south in the Gulf of Salwa is a shallow depression in the sea bed formed by subsidence early in the Pleistocene period. The Bahrain Ridge has been rising in the last few thousand years and marine growth and deposits have caused very shallow conditions around Bahrain. It has been suggested (A. J. Standring, *in pers. comm.* to Gallagher) that it is not impossible that temporary shoal development, combined with exceptionally low tides, could have produced short lived connection with the mainland sufficient to permit the migration of some species after the flooding of the Gulf of Salwa. The distance (some 20 miles to Qatar from Bahrain Island across the shallower part of the Ridge), and the tidal regime, would seem to make this only a remote possibility, except perhaps for gazelle, which are known to wade in search of marine algae. It is said that it is now possible for a man to wade at low tide to some Howar islands from Qatar.

It is considered that 2,000 to 3,000 years would have been required for the hare to have developed its distinct morphological characters; the length of Bahrain's isolation indicated above would have provided the necessary time. The shrew *Suncus murinus*, mongoose *Herpestes edwardsi*, gazelle and some rodents have probably been introduced or re-introduced by man, but the hedgehog, hare, jerboa *Jaculus jaculus* (not *Meriones* as given by Wiltshire) and many reptiles (Gallagher 1971)

have probably been present since Bahrain became isolated. Wiltshire (loc. cit., p. 121) also says that the presence of the *Uromastyx* lizard and the jerboa "suggest that Bahrain was formerly united with the mainland and has never been entirely submerged, to the detriment of its desert fauna, since that union".

THREATS AND CONSERVATION

The increase in the human population (to over 216,000 in April 1971, representing an increase of nearly 3 per cent annually since the previous census in 1965), and the continued improvement in living standards, have led to greater mobility; to a spread of urbanisation, of factories and of roads; to the neglect of some plantations, and to an increased demand upon the natural resources of the island, such as oil, gas, water, stone and sand for construction, and generally wider facilities for recreation. These factors have increased the pressure upon the countryside and, to a greater or lesser degree, upon the fauna and flora.

It is pleasing to be able to report that H H the Amir has continued to deny the general public access to the southern half of the island unless special permission is obtained. This was formerly the reserve for the hunting by the ruling family, by falcon or Saluki hound, of game birds, particularly the Houbara *Chlamydotis undulata*, the hare and possibly the gazelle. Due probably to the scarcity of the first two such hunting is now rarely practised, but the area is regularly traversed by staff of the Bahrain Petroleum Company (BAPCO) as it lies over the oil and gas fields; fishermen and weekend picnic parties are occasionally permitted to enter and to drive anywhere.

The killing of gazelle and hare is forbidden everywhere, but the shooting of hare is known and both these and other species, such as the jerboa and mongoose (and the lizard *Uromastyx microlepis*) are killed by traffic, particularly in Spring. However, such species as the rats *Rattus* spp., Common Mouse and shrew will probably benefit from further urbanisation.

Apart from Man the predators of mammals probably include feral dogs and cats; some birds, mostly migratory (Rogers & Gallagher 1973), and the resident terrestrial snakes (Gallagher 1971). In 1974 tracks of large feral dogs were seen in the desert which would indicate an extension of their range.

SYSTEMATIC LIST

Order Insectivora

Family ERINACEIDAE

Paraechinus aethiopicus Ehrenberg, 1833. Ethiopian Hedgehog

1 ?o, 21 March 1970, near Zallaq.

1 ?o, 29 July 1970, between Nuwaidrat and Malamir.

In or near cultivated or well vegetated areas, including Muharraq Island, but rarely seen. Reported in January, March, April and July, usually on roads, so it is probably active throughout the year.

This is the first record of the species on Bahrain (Harrison 1972). The sides of the carapace of the two specimens are noticeably whiter than other examples of this species from Arabia in the Harrison collection and described in Harrison (1971). These specimens may well represent a local race, but more material is required to determine the constancy of this character.

Family SORICIDAE

Suncus murinus Linnaeus, 1766. House Shrew or Grey Musk Shrew

1 ♀, 18 April 1970, near Manama

1 ♂, 2 ♀ ♀, 6 May 1970, " "

2 ♂ ♂, 2 ♀ ♀, 5 June 1970, " "

1 ♂, 1 ♀, 1 September 1970, " "

1 ♂, 1 ♀, 29 September 1970, " "

1 ♀, 20 May 1970, Awali.

The first record of *Suncus* in Bahrain was a very small female, found dead by T. D. Rogers on the soil covering the municipal rubbish tip near Manama. Despite many subsequent searches both here and elsewhere only the larger, more common form was found. The very small size and the different dentition of the first specimen make it probable that either the smaller form represents an additional introduction from the Orient or that *S. murinus* is a polymorphic species.

Almost entirely nocturnal, it was very common and noisy on the rubbish tip in May 1970, but was rather less common at other times and it seemed to be absent in the cold months. It also occurs quite commonly in and around some houses and gardens near Manama, where it has been recorded climbing the creeper on houses, and it has also been recorded at Awali. Also called the Blind Rat, and known by some Iranians on Bahrain as *musha*, some locals believe them to be poisonous.

Order Chiroptera

Bats were seen in the cultivated zone of Bahrain and Muharraq

Island most of the year. Three species were indentified, but the roosts of only two were found and these could not be checked regularly.

Family EMBALLONURIDAE

Taphozous nudiventris magnus Wettstein, 1913. Naked-bellied Tomb Bat

5 ♂♂, 1 ♀, 10 June 1970, Qala'at al Bahrain.

1 ♀, 12 July 1971, near Tubli.

These specimens are the first record of this species on Bahrain and the most southerly record of the Iraq race (Harrison 1972).

The largest bat seen on Bahrain, they usually fed in the clearings between date plantations. Only one roost was found, in the roof of a tower of the Qala'at al Bahrain (the "Portuguese fort") on the north coast; no other species were seen to share this roost, which was not occupied all the year; very few were present there in April 1974.

Family HIPPOSIDERIDAE

Asellia tridens Geoffroy, 1813. Trident Bat

4 ♂♂, 6 ♀♀, 5 July 1970

4 ♂♂, 3 ♀♀, 17 November 1970

2 ♂♂, 2 ♀♀, 15 January 1971

A fairly common species, of which three roosts were found. The first, on 5 July 1970, was of about 20 bats in a subterranean aqueduct (*qanat*) near the village of Malichya, at the foot of the west flank. These qanat have open man-holes reaching to the surface, like wells, every 20 metres or so, through which the bats fly. Very little dung was present, indicating that this roost is not in regular occupation; no bats were present on 10 December 1970, 26 April 1974, nor on some other occasions.

The second, on 17 November 1970, was in a series of caves reached by a very small tunnel leading from the south face of the historic fortified hill near the settlement of Amar, in the centre of the southern half of Bahrain Island. About a hundred bats seen before they fled down other passages. A huge bank of dung and a very strong smell were evidence of undisturbed occupation over a long period.

The third roost was in a natural cave in the limestone of the east flank, about two kilometres south of the village of Askar. The mouth of the cave was partly walled round, suggesting that it was used as a cistern to collect rain water. The large outer cave is connected to some smaller ones, and in a hollow about 3 metres by 2 metres in one of these about 60 bats were found on 15 January 1971, but only about six bats were present on 27 May 1971.

Although a widely distributed species and known from neighbouring

Qatar and from Hufuf, eastern Saudi Arabia, these were the first records from Bahrain (Harrison 1972, p. 627).

Pipistrellus kuhli ikhwanius Cheesman and Hinton, 1924. Kuhl's Pipistrelle

1 ♀, 4 May 1971, near Manama.

This specimen was taken by T D Rogers at 8 p.m. from amongst many small bats flying in clearings between date gardens at the edge of the marshes near Manama. Small bats, possibly this species, were widespread in the cultivated zone of Bahrain and Muharraq islands, and they were said to be found occasionally on trees as well as buildings.

A widespread species, it was known from Bahrain previously from two specimens in the Cox-Cheesman collection and collected on 9 April 1921 (Cheesman & Hinton 1924, and Harrison 1964, p. 155).

Order Carnivora
Family VIVERRIDAE

Herpestes edwardsi ferrugineus Blanford, 1874. Common Mongoose

1 ♀, 2 November 1969

1 ♂, 30 March 1970

1 ?o, 4 June 1970 (skull only) Malichiya

A successful species, presumably introduced from Iran or India, and known from the cultivated zone, where it is widespread and even occurring in the capital (Mandaville 1971) and once at Awali, where at least one was kept in captivity and later released (I W Hanwell, in pers. comm.).

They live in burrows, drain pipes, holes in the wall etc., and are active throughout the year, foraging singly or in family parties in and near gardens and digging in lawns. The food includes snakes, chickens, eggs and young birds (Belgrave 1953) as well as Coleoptera larvae and possibly rodents, the Marsh Frog *Rana ridibunda* and the eggs of the Terrapin *Clemmys caspica*.

Population was reported only at the end of January and in February, though in India the species breeds throughout the year (Prater 1971).

Both specimens were found by Mrs C Stroud killed by traffic on the north coast road. These are the first mongooses to be recorded from Bahrain (Harrison 1971).

Family FELIDAE

Felis spp.

1 ?o, 12 July 1970 (skull only), Ras al Qarain.

1 ?o, 15 January 1971 (skull only), near Askar.

There is no certain record of wild cats having existed on Bahrain.

However, two very large cat skulls were found, one near the beach about 6 km south of the almost deserted village of Durr on the east coast, and the other with some remains of the animal in the bat cave near Askar. They are not *F. margarita*, but they are quite possibly genuine Wild Cat *F. silvestris*. The first could just possibly be from a feral animal, but the second skull and teeth closely match other specimens of *silvestris* in the Harrison collection; it is however, impossible to be certain without the skin.

One of these might be from a "*Felis lybica* (= *F. silvestris*) from the Ethiopian frontier and released by a friend" in 1969 (R W B Izzard, in pers. comm.).

Mr L D Josephson (later of BAPCO) said, in pers. comm. in 1971, that "a lair of two wild cats in the Bahrain desert was reported in the *Bahrain Islander* (a BAPCO journal) about 15 years ago", but this report has not been traced. Some residents in 1974 said that they had seen large cats, but these animals may be feral domestic cats, of which there must surely be a number.

Order Artiodactyla
Family BOVIDAE

Gazella sp.

Gazelle, apparently all *Gazella subgutturosa* (see later), wander freely over the southern part of Bahrain Island and they have been recorded as far north as Hamala Camp. They often frequent the coasts, usually leaving early in the morning; they also visit Jebel al Dhukhan when water and vegetation is available. The maximum number seen together was 27 (on 13 August 1971, west of Amar, by M C Jennings, in pers. comm.). Young have been seen with adults in spring and a freshly dead juvenile was found in July 1971. Formerly hunted with Saluki hounds and falcons, they are now protected but are occasionally killed by traffic. Some have been reported being drowned in the sea after bolting to escape from helicopters.

Their origin and present status is not clear. Even if there was an indigenous stock it must have been increased by gifts to the Amir and by escapes from the small captive herds kept by some sheikhs.

Gazelle on Howar Island could have been introduced or might have waded from the mainland of Qatar at very low tide. Seven were seen on Umm Nassan Island on 18 April 1970, where there was also a large Blackbuck *Antelope cervicapra* on 27 December 1970, no doubt introduced. About twenty gazelle are said to have been introduced to Umm Nassan from India by Sheikh Hamad, the grandfather of the present Amir. Two Wild Goat were introduced briefly to Howar Island in 1973.

Gazella subgutturosa marica Thomas, 1897. Rhim Gazelle

1 ♂, 12 July 1970, Ras al Qarain

1 ♂, 26 July 1971, Ras Noma

1 ♂, 28 July 1971, Wasmiya, Zallaq

This race was represented from Bahrain by a single specimen in the British Museum (Natural History) collected in 1922. The head from the whole mummified remains of a very immature gazelle, found behind the beach crest on the south east coast, was therefore the first example of this species obtained on Bahrain for nearly fifty years.

Two other young gazelle of this species were found dead on the road near Zallaq on the west coast but, as for the first specimen, only the skulls were retained.

About ten gazelle are said to survive on Howar Island, where at least three were seen regularly at a water cistern and vegetation near the Police Fort in April 1974; resting places were found under rock ledges in the jebels near the centre of the island. The skull of one found dead in a cistern by J H Clingly in 1973 proved to be this sub-species. Mr Clingly says that he believes that it is they that make the small excavations to be seen along the beach crest, and it is presumed that this is in a search for the basal tubers of *Cistanche lutea* (Orobanchaceae) which flower there after Spring rains.

Order Lagomorpha

Family LEPORIDAE

Lepus capensis atallahi Harrison, 1972. Bahrain Hare

1 ♀, 14 April 1971, near Isa Town

1 imm. ♂, 29 July 1970, Khadra. BM (NH) No. 1970.2035

1 ♂, 12 May 1971, Ras Noma

This very small hare, distinguished from all other Arabian hares by its remarkably short ears, was first described (Harrison 1972) from a specimen found dead on the road near Isa Town by T D Rogers. A leveret, found alive by M C Jennings on 29 July 1970 and killed by a dog on 5 August, is in the British Museum (Natural History) spirit collection, and another leveret, taken in the dunes at Ras Noma on 12 May 1971 by Capt D M Dever, is in the Harrison collection.

With the rapid spread of urbanisation and main roads the hare is not as widespread and as common as it was (Belgrave 1953). However, it is still present in most desert areas, including Jebel al Dhukhan, as far north as Isa Town, as far south as the southern tip and on the east and west coasts. One was also seen on Umm Nassan Island on 27 December 1970 and it was present on Howar Island in 1974. Hunted formerly with Saluki hounds it is now protected, but is occasionally shot, and also killed by traffic.

It is mainly crepuscular or nocturnal, and avoids the heat of day by

lying in a shallow form under a bush or rock, or in a burrow of about its own length dug into the sand at the base of a bush, from which it will tend not to move unless approached very closely.

The specimen found on 14 April was host to the sucking lice (Phthiraptera) *Haemodipsus setoni* group Anophira: Hoplopeuridae, the first recorded example from this species.

Order Rodentia
Family DIPODIDAE

Jaculus jaculus vocator Thomas, 1921. Lesser Three-toed Jerboa

- 1 ?o, 7 February 1969, Sakhir
- 1 ?o, 23 March 1969, Central desert
- 1 ♀, 1 December 1969, Central desert near Awali
- 1 ?o, 12 February 1970, Central desert
- 1 ?o, 22 August 1970 (skull only) Wasmia
- 1 ♀, 20 November 1970, Central desert
- 1 ?o, 20 February 1971 (skull only), near Malichiya
- 1 ?o, 3 March 1971 (skull only preserved), Sitra

Widespread in desert and semi-desert, and occurring as far north as Budaia. It is active during all but the cold months, though it may not be seen so frequently in mid-summer.

The burrow is not easily found, presumably because it is usually on flat open ground and the animal usually seals it from within. At Rifa'a boys are said to catch them after pouring water down the burrow. After heavy rain one jerboa was found dead outside a small burrow 10 metres up on a small hillside near Sakhir. Most other specimens have been found killed by traffic on the roads.

One previous specimen from Bahrain is in the British Museum (Natural History) collection (Ellerman 1948).

Family MURIDAE

Rattus rattus Linnaeus, 1758. Black Rat

- 1 ♂, 13 February 1970, Jufair, near Manama
- 1 ♂, 25 February 1970, near Manama
- 1 ♂, 3 March 1970, near Manama
- 1 ♂, 8 March 1970, Manama
- 1 ?o, 22 August 1970, coast at Ras Jazayir
- 3 ♂ ♂, 18 September 1970, Khadra
- 1 ?o, 25 September 1970, Nakhil Lozi, near Buri
- 1 ♂, 9 November 1970, Jufair
- 1 ?o, 5 April 1971, Budaia

Widespread in habited and vegetated areas and in semi-desert. Specimens, all of the pale form, have been seen in most parts of the northern

half of Bahrain and on Muharraq Island; tracks, probably of this species, were found on Jebel al Dukhan and on all beaches, so that it may exist over the southern half also. They commonly climb trees by day and night. The specimen on 5 April was found in the gut of a snake *Coluber ventromaculatus*.

Two specimens were host to the Sucking Louse (Anoplura) *Polyplax spinulosa* (Burmeister 1838) and one to a tick *Hyalomma* sp. (probably *impeltatum*).

Earlier specimens from Bahrain are in the British Museum (Natural History) collection (Harrison 1972, p. 460).

Rattus norvegicus norvegicus Berkenhout, 1769. Brown Rat

1 ?o, December 1968, (skull), Ras abu Jarjur

1 ♀, 23 August 1969, Jufair, near Manama

1 ♂, 25 August 1969, Jufair, near Manama

1 ?o, 30 August 1969, Ras Noma

1 ♂, 1 January 1970, near Manama

1 ♂, 7 November 1970, Muharraq causeway

1 ad. ♀, 1 imm. ?o, 16 April 1974, Howar Island (skulls retained)

It occurs around the harbour and habited areas of Muharraq Island and of Bahrain Island, certainly as far south as Sitra and Ras Noma.

The specimens collected are the first to be recorded from Bahrain (Harrison 1971, and 1972, p. 465).

Discovered for the first time on Howar Island near the old village and police fort. Skulls were also found in bird pellets from the centre of the island, and burrows were seen in debris and dry seaweed along the west coast.

The Howar specimens were host to the mite *Laelaps nuttali* Hirst.

Mus musculus gentilulus Thomas, 1919. Common Mouse

Very common and widespread over most of the islands, where it has been taken in domestic areas, under vegetation, in pure desert and on beaches. The burrows are in or at the base of sand hummocks, under vegetation or on flat ground (as on some beaches); some are sealed from within. Entirely nocturnal.

One had been swallowed by a snake *C. ventromaculatus*, and one on 31 May contained four embryos. The skull of one was found in an old pellet of a predatory bird on Howar Island in April 1974.

An earlier specimen from Bahrain is in the British Museum (Natural History) (Harrison 1972, p. 474).

Family CRICETIDAE

Meriones crassus crassus Sundevall, 1842. Sundevall's Jird

2 ♂ ♂, 17 April 1970, Howar Island, Bahrain

These specimens came from burrows under rocks on the plateau at

the north of the island. Others were seen in a colony of burrows in sandy hummocks and soft ground under bushes near the west coast, and other rodent burrows, possibly of this species, were in rocky and sandy ground in other parts of the island.

In subsequent searches of similar ground on Bahrain Island the lizard *U. microlepis* was found to occupy most likely sites. However, *Meriones* may yet be found to occur in parts of that island also.

These are the first specimens from the Bahrain Island. The nearest previous examples came from Al Khobar, 26 miles west of Bahrain Island. The specimens resemble series of the typical form from Sharjah, on the mainland, in all essential respects.

These specimens were host to the mites *Androlaelaps longipes* (Bregetova); an association with *Meriones* species was noted by Bregetova (1952) in USSR and Costa (1951) in Israel.

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